UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

COMPETITIVE TECHNOLOGIES, INC., ET AL.,

Plaintiff(s),

v.

FUJITSU LIMITED, ET AL.,

Defendant(s).

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No. C-02-1673 JCS

CORRECTED ORDER:

GRANTING DEFENDANTS' CONSOLIDATED MOTIONS FOR SUMMARY JUDGMENT OF INVALIDITY AND NON-INFRINGEMENT OF CLAIMS OF THE '400 PATENT [Docket No. 568], DENYING UI'S MOTION TO STRIKE IN PART THE DECLARATION OF FUJITSU'S EXPERT, DR. SILZARS [Docket No. 575], DENYING DEFENDANTS' AND COUNTER-CLAIMANTS' MOTION TO SHORTEN TIME [Docket No. 627], AND GRANTING IN PART AND DENYING IN PART FUJITSU'S MOTION TO STRIKE, OR IN THE ALTERNATIVE, REPLY IN SUPPORT OF EVIDENCE OBJECTIONS [Docket No. 628][1]

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[1] In this Order, the Court corrects typographical errors in its July 1, 2004 Order. In addition, the final paragraph of the July 1, 2004 Order, scheduling a case management conference, has been omitted as that issue will be addressed in a separate order. In all other respects, this Order is identical to the July 1, 2004 Order.

I. INTRODUCTION[2]

On Friday, April 2, 2004, Defendants' Consolidated Motions for Summary Judgment of Invalidity and Non-Infringement of Claims of the '400 Patent ("the Motion") came on for hearing. For the reasons stated below, Fujitsu's Motion is GRANTED. The Court further holds as follows: 1) The University of Illinois' Motion to Strike in Part the Declaration of Fujitsu's Expert, Dr. Aris Silzars ("UI's Motion to Strike") is DENIED; 2) Fujitsu's Motion to Shorten Time is DENIED; and 3) Fujitsu's Motion to Strike is GRANTED in part and DENIED in part.

II. BACKGROUND

In this case, which involves driver circuits for plasma display panels, UI accuses Fujitsu of infringing two of its patents – U.S. Patent No. 4,866,349 ("the '349 Patent") and U.S. Patent No. 5,081,400 ("the '400 Patent"). The '400 Patent is a continuation of the '349 Patent, and both patents are entitled, "Power Efficient Sustain Drivers and Address Drivers for Plasma Panel." Following a claim construction hearing, the Court issued its claim construction order on July 31, 2003.[3] Fujitsu now brings a motion for summary judgment of invalidity and noninfringement. In the Motion, Fujitsu requests that this Court hold, as a matter of law, that: 1) claims 21-25, 27-31, 35, and 38 of the '400 Patent are invalid as anticipated; 2) claims 21-40 of the '400 Patent are not literally infringed; and 3) claims 26, 32-33, 36, and 39-40 of the '400 Patent ("the Remaining Claims") are not infringed under the doctrine of equivalents.[4]

UI concedes that as interpreted in the Claim Construction Order, claims 21-25, 27, 35 and 38 are anticipated by Japanese Patent Publication No. 58-53344 ("Kanatani" or "Kanatani '344 Publication") and therefore are invalid. *See* Expert Declaration of Dr. Aris Silzars Regarding Motions for Summary Judgment ("Silzars SJ Decl."), Ex. 39, The University's Literal Infringement and Validity Disclosures Pursuant to Paragraphs 1 and 2 of the Court's September 11, 2003 Scheduling Order ("UI's September 18, 2003

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[2] In this Order, the Court refers to Defendants collectively as "Fujitsu" and to Plaintiff University of Illinois as "UI."

[3] The Court filed a Corrected Claim Construction Order on August 8, 2003, correcting typographical errors found in the July 31, 2003 Order. In this Order, the Court shall cite to the August 8, 2003 claim construction order as "Claim Construction Order."

[4] Hereinafter, claim numbers refer to the '400 Patent unless otherwise indicated.

Disclosures") at 1. Accordingly, the Motion is GRANTED as to claims 21-25, 27, 35 and 38 on the basis that these claims are invalid. In addition, UI does not dispute that under the Court's claim construction, claims 21 through 40 are not literally infringed. *See id.*, Literal Infringement Claim Chart. Therefore, summary judgment is GRANTED on these claims with respect to the question of literal infringement. However, UI opposes the Motion as to claims 28 - 31 (on the question of invalidity) and claims 26, 32-33, 36, 39-40 (on the question of infringement under the doctrine of equivalents). These issues are addressed below.

III. ANALYSIS

A. UI's Motion to Strike

UI brings a motion to "strike in part" the declaration of Fujitsu's expert, Dr. Silzars, which was filed in support of Fujitsu's Motion. UI argues that the declaration is improper because it includes new opinions that were not included in Dr. Silzars' expert report and were not addressed at his deposition, in violation of this Court's January 6, 2004 Order. However, UI fails to identify any specific opinions that are improper. Accordingly, UI's Motion to Strike is DENIED.

B. Fujitsu's Objections to Evidence, Motion to Strike, and Motion to Shorten Time

On February 27, 2004, Fujitsu filed, along with its Reply on the substantive Motion, Defendants' and Counterclaimants' Objections to Evidence ("Objections to Evidence"). In Fujitsu's Objections to Evidence, it objected on numerous grounds to evidence introduced by UI in support of its Opposition. Almost three weeks later, ten days before the scheduled hearing on the Motion, UI filed The University of Illinois' Response to Defendants' and Counterclaimants' Objections to Evidence ("UI Response"). The brief addressed not only Fujitsu's evidentiary objections but also energy efficiency calculations that were presented for the first time in Fujitsu's Reply. Six days later, on March 29, 2004 – now only four days before the scheduled hearing – Fujitsu filed a Motion to Strike or, in the Alternative, Reply in Support of Objections to Evidence ("Fujitsu's Motion to Strike"). At the same time, Fujitsu filed a Motion to Shorten Time, requesting that the Court allow it to reply to or move to strike UI's Response on a shortened schedule and that the Court rule on its Motion to Strike prior to taking the Motion under submission.

At the April 2, 2004 hearing, the Court declined to rule on Fujitsu's Motion to Strike or its Motion to Shorten Time, noting that it had not had the opportunity to review any of the late-filed briefs – UI's

Response and Fujitsu's Motion to Strike – in detail. Rather, the Court took these motions, along with Fujitsu's Objections to Evidence, under submission following the hearing. The Court now rules on Fujitsu's Motion to Shorten Time, Motion to Strike, and Objections to Evidence. First, Fujitsu's Motion to Shorten Time is DENIED as moot. Because the Court did not consider UI's Response *or* Fujitsu's Motion to Strike at the April 2, 2004 hearing, Fujitsu was not prejudiced by its inability to respond to UI's late submission, making an order shortening time unnecessary.

Second, Fujitsu's Motion to Strike is GRANTED in part and DENIED in part, as follows.[5] The Motion to Strike is GRANTED to the extent that UI's Response goes beyond the scope of Fujitsu's Objections to Evidence by addressing energy efficiency calculations contained in Fujitsu's Reply on the underlying substantive motion. Fujitsu is correct that this portion of UI's brief is an improper sur-reply under the local rules. Therefore, section II(B)2(b) of UI's Response shall be stricken. By the same token, the Court also does not consider the energy efficiency calculations that were introduced by Fujitsu for the first time in its Reply, at page 17, lines 4-20. *See United States v. Boyce*, 148 F. Supp. 2d 1069, 1084 (S.D. Cal. 2001) (citing to *United States v. Bohn*, 956 F.2d 208, 209 (9th Cir. 1992) (noting that courts generally decline to consider arguments raised for the first time in a reply brief); *United States v. Boggi*, 74 F.3d 470, 478 (3d Cir. 1996) (noting that considering arguments raised for first time in reply brief deprives opposing party of adequate opportunity to respond); *Playboy Enters., Inc. v. Dumas*, 960 F. Supp. 710, 720 n. 7 (S.D.N.Y. 1997) ("Arguments made for the first time in a reply brief need not be considered by a court")).

Fujitsu's Motion to Strike is DENIED as to the remainder of UI's Response. Although Fujitsu is correct that UI should have obtained leave of Court to file its brief, the Court declines to strike the portions that address Fujitsu's Objections to Evidence because, had UI sought leave to file the brief, leave would have been granted. Fujitsu's Objections to Evidence raise significant issues, to which UI is entitled to respond. Similarly, with respect to the verifications filed by UI as part of its Response – which included numerous revisions of the unverified translations that were filed by UI in support of its Opposition – UI failed to abide by local rules. Again, however, any prejudice that might have resulted from this late

[5] The Court finds that Fujitsu's Motion to Strike is suitable for decision without oral argument, pursuant to Local Rule 7-1(b).

submission is mitigated by the fact that Defendants were given three weeks from the April 2, 2004 hearing date to bring to the Court's attention any issues related to the Motion raised by the new translations. On April 26, 2004, Fujitsu notified the Court that the errors in the translations to which it objects do not "impact the summary judgment motions." Therefore, in ruling on Fujitsu's Objections to Evidence, the Court considers UI's Response, with the exception of the portion discussed above. The Court also considers the Reply portion of Fujitsu's Motion to Strike.

With respect to Fujitsu's Objections to Evidence, the Court addresses Objection Nos. 1 - 3, all of which are based on *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311 (9th Cir. 1995), in the substantive portion of this Order. The Court rules as follows with respect to Fujitsu's remaining objections.

First, as to evidence related to Fujitsu's alleged infringement based on use of two inductors, Objection No. 4, the Court does not rely on this evidence and therefore, declines to rule on this objection.

Second, the Court overrules Objection Nos. 5 and 6, based on UI's failure to submit the expert reports of Drs. Inan and Bitzer under penalty of perjury. Although Fujitsu is correct that these reports should have been signed under penalty of perjury, as the party opposing summary judgment, UI's papers are "held to a less exacting standard" than those of Fujitsu. *See Lodge Hall Music, Inc. v. Waco Wrangler Club, Inc.*, 831 F.2d 77, 80 (5th Cir. 1987) (citing C. Wright, A. Miller, M. Kane, *Federal Practice and Procedure* § 2378 at 467 (1983)). Having carefully reviewed the reports of Dr. Inan and Dr. Bitzer, the Court finds that they meet the requirements of Rule 56(e), namely, that they are "made on personal knowledge, . . . set forth such facts as would be admissible in evidence, and . . . show affirmatively that the affiant is competent to testify to the matters stated therein." Fed. R. Civ. P. 56(e). Under these circumstances, the Court declines to exclude the Inan and Bitzer reports. *See Shinabarger v. United Aircraft Corp.*, 262 F. Supp. 52, 56 (D. Conn. 1966) (holding that declaration submitted in opposition to summary judgment that was signed but not sworn could be considered because "the existence of such a statement, although not presently in evidentiary form, should alert the summary judgment court to the availability at the trial of the facts contained in the statement").

Third, the Court overrules Objection Nos. 7-8, based on Dr. Inan's alleged lack of qualifications regarding the manufacture and design of display panels. The Court concludes that Dr. Inan possesses

sufficient knowledge and expertise to satisfy the requirements of Fed. R. Evid. 702 as to the challenged opinions.

Fourth, the Court overrules Objection No. 9, based on UI's failure to submit certifications of translations. As discussed above, UI subsequently submitted certifications and, to the extent that UI's certifications included revisions of the translations, Fujitsu has now agreed that those revisions have no impact on its summary judgment motions.

Fifth, the Court overrules Objection No. 10 to the extent it is based on UI's failure to submit certifications of translations for the same reason Objection No. 9 is overruled. To the extent Objection No. 10 is based on Fujitsu's position that copying is irrelevant, the Court declines to rule on this objection because that issue is more appropriately addressed on the merits.

Sixth, the Court overrules Objection Nos. 11-13, based on the assertion that the declarations of the inventors are irrelevant. Although Fujitsu is correct that the test for determining whether an equivalent would have been foreseeable at the time of a narrowing amendment is objective under *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki*, 344 F.3d 1359, 1369 (Fed. Cir. 2003), that case does not hold that the subjective knowledge of the inventors at the time of the amendment may not be considered in determining whether this objective test is met. The Court concludes that although these declarations are not dispositive of this issue, they may be considered.

Seventh, the Court declines to rule on Objection No. 14, in which Fujitsu asserts that UI's energy efficiency calculations contradict the patent and, therefore, should be excluded as irrelevant. This issues goes directly to the merits of the Motion and therefore, is appropriately addressed in the substantive portion of this Order rather than in an evidentiary ruling.

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C. Summary Judgment Motions

1. Summary Judgment Standard

Summary judgment is appropriate "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c). In order to prevail, a party moving for summary judgment must show the absence of a genuine issue of material fact

with respect to an essential element of the non-moving party's claim, or to a defense on which the non-moving party will bear the burden persuasion at trial. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986). Once the movant has made this showing, the burden then shifts to the party opposing summary judgment to designate "specific facts showing there is a genuine issue for trial." *Id.* at 323.

In determining whether summary judgment is appropriate, the court must draw all reasonable inferences in favor of the non-moving party. *Id*. However, summary judgment must be supported by "facts as would be admissible in evidence." Fed. R. Civ. P. 56(e). Scientific evidence, therefore, must meet the standards of relevance and reliability articulated in *Daubert v. Merrell Dow Pharm., Inc*. *See Seaboard Lumber Co. v. United States*, 308 F.3d 1283, 1301 (Fed. Cir. 2002)(citing *Daubert*, 509 U.S. 579, 589 (1993)). The Supreme Court in *Daubert* described this inquiry as follows:

> Faced with a proffer of expert scientific testimony, then, the trial judge must determine . . . whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue. This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.

509 U.S. at 590.

2. Invalidity of Claims 28-31

a. Legal Standard

A patent claim is anticipated, and therefore invalid, if a prior art reference "discloses, either expressly or inherently, all of the limitations of the claim." *EMI Group North America, Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342, 1350 (Fed. Cir. 2001). In the context of a means-plus-function claim, the invalidating prior art must disclose not simply *a* means for achieving the desired function but rather, the *particular* structure recited in the written description corresponding to that function. *See In re Donaldson Co., Inc.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (holding that 35 U.S.C. § 112, paragraph 6, which limits means-plus-function claims to the structures described in the Specification and their equivalents, "applies regardless of the context in which the interpretation of means-plus-function language arises, i.e., whether as part of a patentability determination in the PTO or as part of a validity or infringement determination in a court").

Because of the presumption of validity under 35 U.S.C. § 282,[6] "a defendant must show invalidity by facts supported by clear and convincing evidence." *Beckson Marine, Inc. v. NFM, Inc.*, 292 F.3d 718, 725 (Fed. Cir. 2002). On summary judgment, the court draws all reasonable factual inferences in favor of the non-movant. *Id*. at 722 (citing to *Anderson v. Liberty Lobby Inc.*, 477 U.S. 242, 255 (1986)). Accordingly, summary judgment on anticipation may be granted "only when the underlying factual inquiries present no lingering genuine issues." *Id*.

b. The Forcing Voltage Claims (Claims 28 and 29)

i. Summary of the Arguments

Fujitsu argues that both the functions and the means of claims 28 and 29 ("the Forcing Voltage Claims")[7] are disclosed in the Kanatani '344 Publication. First, Fujitsu asserts that Kanatani meets the recited function of claims 28 and 29, namely, "applying a forcing voltage which is about one-half the magnitude of the voltage level the panel capacitance reaches after charging." According to Fujitsu, UI cannot dispute that the Kanatani prior art meets this function because it has already made a binding admission that Kanatani meets the function of method claims 22 and 23, which disclose the identical function.[8] Silzars SJ Decl., Ex. 39, UI's September 18, 2003 Disclosures at 1. In addition, Fujitsu points

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[6] Section 282 provides, in relevant part, as follows:

> A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. . . .

35 U.S.C. § 282.

[7] Claim 28 states as follows:

> A display panel according to claim 27, wherein said means for charging the panel capacitance includes means for applying a forcing voltage which is about one-half the magnitude of the voltage level the panel capacitance reaches after charging.

Claim 29 states as follows:

> A display panel according to claim 28, wherein said means for discharging the panel capacitance includes means for applying a forcing voltage which is about one-half the magnitude of the voltage level the panel capacitance reaches after charging.

[8] Claim 22 states as follows:

> The method of claim 21, wherein charging of the panel capacitance includes applying a forcing

to testimony by UI's validity expert, Dr. Bitzer, which it asserts supports the conclusions that: 1) the function of the Forcing Voltage Claims is met by Kanatani; and 2) one of ordinary skill in the art would have been enabled to practice the function of the Forcing Voltage Claims with the structures disclosed in Kanatani. *See* Silzars SJ Decl., Ex. 11, Bitzer Depo. at 525 - 533.

Second, Fujitsu argues that the *means* for accomplishing the forcing voltage function recited in claims 28 and 29 also is anticipated by the Kanatani prior art. In support of this contention, Fujitsu asserts that the '400 Patent discloses several structures for applying a forcing voltage that use a connection to a power supply, as in Kanatani. Specifically, Fujitsu argues that the circuits depicted in Figures 10, 11 and 13 all apply a forcing voltage via connection to a power supply.

Figure 10 depicts an "integrated, power efficient sustain driver circuit according to the invention" in which the forcing voltage is applied using a voltage divider consisting of two external capacitors (Css1 and Css2) that are supplied on start-up by connections to power supplies (Vcc and ground). '400 Patent, col. 15, lines 22-24, 38-42; Silzars SJ Decl. at 98, ¶ 196. Figure 11 shows an embodiment in which the forcing voltage is supplied directly from a power supply generating voltage

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level Vdd. Silzars SJ Decl. at 98, ¶ 197. Figure 13 depicts a circuit in which ground is used as a power supply connection to apply a forcing voltage. *See* Silzars SJ Decl. at 99, ¶ 198.

With respect to Figure 10, Fujitsu argues that UI's validity expert, Dr. Bitzer, admitted during his deposition that current for charging in that figure is drawn from the power supply labeled Vcc through capacitors Css1 and Css2. *See* Silzars SJ Decl., Ex. 11, Bitzer Depo. at 545-546 (stating that "[during] the time that the inductor current is increasing, there can be and would be current through Css1 from Vcc and there will be current from Css2 as well"). Fujitsu asserts that because Figure 10, by UI's own admission, draws current from a generic power supply to apply a forcing voltage, UI cannot now argue that

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> voltage which is about one-half the magnitude of the voltage level the panel capacitance reaches after charging.

Claim 23 states as follows:

> The method of claim 22, wherein discharging of the panel capacitance includes applying a forcing voltage which is about one-half the magnitude of the voltage level the panel capacitance reaches after charging.

the forcing voltage means excludes structures that use a direct connection to a power supply. Fujitsu further points to the Claim Construction Order, in which the Court held that Figure 10 is corresponding structure for the means for charging and discharging recited in claim 27,[9] on which claim 28 depends. Claim Construction Order at 56. According to Fujitsu, the means for charging and discharging recited in claim 27 refers to the forcing voltage recited in claim 28.

Fujitsu argues further that the embodiment shown in Figure 11, which shows a connection to power supply Vdd without capacitor Css (or Css1 and Css2), is also corresponding structure for the Forcing Voltage Claims. In particular, citing to Dr. Bitzer's deposition testimony, Fujitsu asserts that Vdd is the voltage across the inductor, that is, the forcing voltage, and the voltage would rise to 2 Vdd when the panel capacitance is charged. *See* Silzars SJ Decl., Ex. 11, Bitzer Depo. at 530 ("I'm using the term 'forcing voltage' here as what anybody standard in the art would have done; namely, the voltage across the inductor"), 550-551 ("Given that there's nothing else on the output [in Figure 11], the voltage across the output would rise, as shown in Figure 12, to 2 Vdd"). Fujitsu further cites to deposition testimony by Drs. Inan and Bitzer in which both experts testified that Vdd in Figure 11 is a "power supply." Silzars SJ Decl., Ex. 6, Inan Depo. at 133 & Ex. 11, Bitzer Depo. at 548. Finally, Fujitsu points to UI's interrogatory responses, in which UI stated identified Figure 11 as corresponding structure for the means for applying a forcing voltage recited in claim 28. Silzars SJ Decl., Ex. 48, UI Interrogatory Responses. According to Fujitsu, because the structure shown in Figure 11 is *identical* to the structure used in Kanatani to apply a forcing voltage, Figure 11 provides an additional basis for concluding that the Forcing Voltage Claims are

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[9] Claim 27 states as follows:

> A display panel having panel electrodes and panel capacitance, an inductor coupled to the panel electrodes, and a driver circuit coupled to the inductor for operating the display panel through the inductor, the driver circuit including:
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> means for charging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero; and
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> means for discharging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero.

anticipated. *See* Silzars SJ Decl. at 101-102, ¶¶ 202-204 (citing to Kanatani '344 Publication, Figures 9-10).

Similarly, Fujitsu argues that Figure 13, which shows a connection to ground as a power supply, supports its invalidity argument. Fujitsu points to the Specification, which states that Figures 11-14 are examples of "the energy recovery technique previously described in connection with the sustain circuit." '400 Patent, col. 15, lines 62-66. Fujitsu also points to the corresponding waveform in Figure 14, which shows charging through the inductor until the inductor current equals zero and then discharging through the inductor until the inductor current reaches zero. Fujitsu points as well to UI's interrogatory responses, in which UI included Figure 13 as corresponding structure for the means for applying a forcing voltage recited in claim 28. Silzars SJ Decl., Ex. 48, UI Interrogatory Responses.

Finally, Fujitsu argues that UI's position on invalidity is undermined by its allegation that Fujitsu's TERES and TERES + driver circuits infringe the '400 patent. According to Fujitsu, the TERES and TERES+ driver circuits, like Kanatani, use a direct connection to a power supply to achieve a forcing voltage. Thus, Fujitsu asserts, if the Court accepts UI's argument that a forcing voltage means using a direct connection to a power supply is not equivalent to a structure that uses Css in conjunction with a power supply, the Court should also enter summary judgment of non-infringement as to the TERES and TERES+ driver circuits.

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In its Opposition, UI does not dispute that Kanatani discloses the function of the Forcing Voltage Claims. It is for this reason, UI explains, that it has conceded that method claims 22-25 are anticipated by Kanatani. UI argues, however, that the structures used to apply a forcing voltage in Kanatani are not the same as those that are disclosed in the '400 Patent. First, UI argues that the corresponding structure for the Forcing Voltage Claims includes only the structures shown in the figures depicting sustain drivers, that is, Figures 5, 7, 9 and 10, all of which use Css or (in the case of Figure 10) Css1 and Css2, to apply the forcing voltage. Because Figures 11 and 13 depict address drivers, UI asserts, these embodiments do not disclose corresponding structure for the Forcing Voltage Claims. In support of this position, UI relies on the language in the '400 Patent, pointing out that the term "forcing voltage" is only used in the Specification

in connection with sustain circuit embodiments. *See* Bitzer Validity Expert Report at 4: 22-25 (citing to '400 Patent at 10:12, 10:21, 10:35, 10:37, 11:26 and 11:50).

Second, UI asserts that there are material issues of fact with respect to whether Figure 10 – which uses power supply Vcc in conjunction with capacitors Css1 and Css2 – is equivalent to the power supply used (without capacitors) by Kanatani to apply a forcing voltage. In particular, UI cites to testimony by its expert, Dr. Bitzer, that use of a generic power supply is not equivalent to a structure that uses capacitor Css for two reasons: 1) use of Kanatani's generic power supply results in higher energy losses during sustaining than use of a power supply in conjunction with capacitor Css; and 2) the generic power supply can compensate for such losses by adding energy to the circuit, whereas Css cannot provide any additional energy. Bitzer Report at 6. In his report, Dr. Bitzer asserts that his conclusions are strengthened by Fujitsu's own documents, which indicate that when Fujitsu tried to replace the forcing voltage capacitors in its own products with a power supply, the result was dramatically lowered energy efficiency. Bitzer Validity Expert Report at 6-7 and Ex.s I and J thereto.

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UI argues further that the power supply Vcc shown in Figure 10 does not perform the forcing voltage function because the power supply in Figure 10 is at Vcc rather than the forcing voltage level Vss.[10] *See* Bitzer Validity Expert Report at 5, n. 1.

UI rejects Fujitsu's assertion that because the Court held in the Claim Construction Order that Figure 11 discloses corresponding structure for claim 27, Figure 11 must also disclose corresponding structure for the Forcing Voltage Claims. UI argues that because the Forcing Voltage Claims add limitations to claim 27, they eliminate certain embodiments, such as the one shown in Figure 11, while also requiring the inclusion of additional corresponding structure, namely, Css.

[10] The inventors define forcing voltage Vss as being Vcc/2. '400 Patent, col. 10, line 13.

Finally, UI rejects Fujitsu's assertion that its invalidity argument is inconsistent with its position that the TERES and TERES + circuits infringe the '400 Patent. In particular, UI cites to testimony by Dr. Inan that it says supports the conclusion that while Kanatani's generic power supply is not structurally equivalent to the embodiment shown in Figure 10, the means for applying a forcing voltage used by TERES and TERES + is equivalent to the embodiment in Figure 10. Opposition at 55 (citing Inan Report at 32-35).

ii. Discussion

In order to determine whether Fujitsu is entitled to summary judgment of invalidity as to the Forcing Voltage Claims, the Court must engage in additional claim construction, as the Forcing Voltage Claims were not expressly addressed in the Claim Construction Order. The parties are in agreement that the function of the Forcing Voltage Claims is "applying a forcing voltage which is about one-half the magnitude of the voltage level the panel capacitance reaches after charging." Further, UI does not dispute that this function is disclosed in Kanatani. Thus, the question of whether the Forcing Voltage Claims are anticipated by Kanatani turns on corresponding structure. In particular, if Kanatani discloses the same or an equivalent corresponding structure for applying a forcing voltage as is disclosed in the '400 Patent, there remains no genuine factual question as to anticipation. The Court concludes, based on Figure 11 of the '400 Patent, that Kanatani discloses an

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identical structure for applying a forcing voltage and therefore, that the Forcing Voltage Claims are invalid.

In determining what constitutes corresponding structure, the Court looks to the Specification to determine what structures (if any) are "clearly associate[d]" with the function of a means-plus-function claim. *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002). Neither the Forcing Voltage Claims, nor claim 27 (on which the Forcing Voltage Claims depend) are expressly limited to sustaining. Moreover, although the words "forcing voltage" are only used in the '400 Patent in describing sustain driver circuits, UI has presented no evidence that an individual of ordinary skill in the art would have understood the term "forcing voltage" to refer only to sustaining. *See The Toro Co. v. White Cons. Indus.*, 199 F.3d 1295, 1299 (Fed. Cir. 1999) (holding that there is a strong presumption

that a claim term carries the ordinary and customary meaning that would be ascribed to that term by a person of ordinary skill in the field of the invention). To the contrary, UI's expert, Dr. Bitzer, defined "forcing voltage" simply as "the voltage across the inductor." Silzars SJ Decl., Ex. 11, Bitzer Depo. at 530. As a result, any embodiment described in the Specification that is clearly associated with the function of the Forcing Voltage Claims – whether in sustaining or addressing – may constitute corresponding structure.

UI argues that because the words "forcing voltage" are not actually used in the Specification in describing Figures 11-13, these figures cannot constitute corresponding structure for the Forcing Voltage Claims. UI's focus is too narrow. The inventors make clear in the Specification that the same energy efficient technique described for sustain drivers – which uses a "forcing voltage" – also can be used in address pulse generators. Indeed, the Specification makes this point at least twice. *See* '400 Patent, col. 8, lines 18-21; col. 15, lines 62-65. The conclusion that Figures 11-13 are corresponding structure for the Forcing Voltage claims finds further support in the prosecution history, in which the inventors expressly stated that application claims 51-71 (claims 21 - 41 of the '400 patent) "are directed to an energy efficient technique . . . [which is] described throughout the application, particularly . . . with reference to . . . Figures 5-14." Silzars SJ Decl., Ex. 14, '349 Patent Application at FL062988-89.

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In Figure 11, it is undisputed that the generic power supply applies a voltage Vdd across the inductor that is "about one-half the magnitude of the voltage level the panel capacitance reaches after charging." *See* Silzars SJ Decl., Ex. 11, Bitzer Depo. at 551 (testifying that when switch S1 is closed in Figure 12, which depicts the corresponding waveform for Figure 11, "the voltage across the output would rise . . . to 2 Vdd"). Read in the context of the Patent as a whole, it is evident that the application of voltage Vdd depicted in Figure 11 is a "forcing voltage," even if those words are not used in describing the figure.

Finally, the same structure is disclosed in the Kanatani '344 Publication for applying a forcing voltage. In particular, Figures 9 and 10 show a generic power supply, labeled "E," which is used to apply a forcing voltage to drive a resonant circuit in a display panel, causing the voltage to reach 2E. Silzars SJ Decl. at 101-102, ¶¶ 202-204. As noted above, UI does not dispute that Kanatani meets the function of the Forcing Voltage Claims.

Because Figure 11 uses a generic power supply, which is the identical structure that is used in Kanatani to achieve the same function, the Forcing Voltage Claims are anticipated as a matter of law.

c. The Maintaining Claims (Claims 30 and 31)

i. Summary of the Arguments

Fujitsu argues that the Kanatani '344 Publication also anticipates claims 30 and 31 ("the Maintaining Claims")[11] because in Figures 9 and 10 of Kanatani, diodes D or D1 and D2 are used to maintain the voltage on the panel capacitance and the '400 Patent also discloses diodes, or their equivalent, as corresponding structure to achieve the maintaining function. Motion at 9-14. Fujitsu makes two main arguments. First, it argues that the Claim Construction Order adopted the agreement of the parties that diodes *alone* can perform maintaining and therefore constitute corresponding structure. *Id*. at 12; *see also* Silzars SJ Decl. at 105, ¶ 212. Fujitsu notes that UI expressly argued in its Opening Claim Construction Brief that a diode-only embodiment constituted corresponding structure for the maintaining claim term and that Fujitsu agreed with UI in its responsive brief. Motion at 11; *see also* Silzars SJ Decl. at 105, ¶ 213 & Ex. 52, Opening Claim Construction Brief 43; Ex. 53, Fujitsu's Responsive Brief at 36, 44; Ex. 54, UI Reply at 32. Similarly, the parties agreed in the Joint Claim Construction Statement that one of the embodiments that achieved the maintaining function of claim 31 used only diodes. Motion at 12 (citing Silzars SJ Decl., Ex. 32, Joint Claim Construction Statement, Claim Terms 30 and 38). Thus, Fujitsu argues, the Court's statement that "the parties agree that diodes D1 and D2 should be included as corresponding structure for the maintaining claim terms," must be read as an acknowledgment by the Court that a diode-only embodiment is included as corresponding structure for the maintaining claim terms. *Id*. Under this reading of the Claim Construction Order, Fujitsu asserts, the Kanatani '344

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[11] Claim 30 states as follows:

> A display panel according to claim 27, including means for maintaining the panel capacitance in a discharged state upon the inductor current reaching zero and prior to again charging the panel capacitance.

Claim 31 states as follows:

> A display panel according to claim 27, including means for maintaining the panel capacitance in a charged states after charging the panel capacitance and prior to discharge, and means for maintaining the panel capacitance in a discharged state after discharge and prior to again charging the panel capacitance.

Publication clearly anticipates the Maintaining Claims because Kanatani discloses the exact structure that is disclosed in the '400 patent. *Id*. at 9 -12.

Second, Fujitsu argues, both the '400 Patent and other prior art from the relevant time period make clear that use of one or more diodes to maintain the voltage level of the panel capacitance – as used in Kanatani – was known to be interchangeable with use of a switch/diode combination. *Id*. at 13. Thus, even if the Claim Construction Order excludes a diode-only embodiment and requires a diode-switch combination, the maintaining claims are invalid. In support of its contention that diodes were interchangeable with a switch/diode combination, Fujitsu points first to what it argues are binding admissions by UI that the diode-only embodiment is equivalent for performing the maintaining function. *Id*. In particular, Fujitsu points to the claim construction briefs and the Joint Claim Construction statement, cited above. *Id.* Fujitsu also points to the fact that UI has conceded that claims 24 and 25, which are method claims that describe "maintaining the panel capacitance," are anticipated by the Kanatani '344 Publication. *Id*. Fujitsu argues that UI cannot concede that the diodes in Kanatani achieve the function of maintaining the voltage of the panel capacitance while at the same time taking the position that diodes do *not* perform the function of the Maintaining Claims.

UI challenges Fujitsu's arguments on several grounds. First, UI reads the Claim Construction Order as holding that diodes constitute corresponding structure for claim 31 only when they are used in conjunction with switches and not when they are used alone. Opposition at 56. Thus, UI asserts, Kanatani only anticipates the Maintaining Claims if Kanatani's use of diodes alone to accomplish maintaining is equivalent to a switch/diode combination. *Id*. Second, UI asserts based on Dr. Bitzer's report that use of diodes alone is not equivalent to a switch/diode combination because a diode can only prevent current flow along one particular current path whereas a switch/diode combination allows a reference voltage to be added and maintained, even if there is more than one current path. *Id*. at 57 (citing Bitzer Validity Expert Report at 9).

In its Reply, Fujitsu's rejects UI's assertion that diodes are not equivalent to switches used in conjunction with diodes. Reply at 6. Fujitsu points to deposition testimony by Dr. Bitzer in which he concedes that the "stray current" problem associated with a diode only embodiment is not a problem in addressing operations but only in sustaining operations. *Id*. (citing Silzars SJ Decl., Ex. 11, Bitzer Depo. at

582). Thus, Fujitsu asserts, this evidence does not create a material issue of fact because nothing in claim 31 suggests that it is limited to sustaining. *Id*. Fujitsu also points to Figures 13 and 14 of the '400 Patent, which depicts an address driver which uses a diode and an *open* switch to maintain. *Id*. at 8-9. Because in this embodiment maintaining does not require that a switch be closed, Fujitsu argues, these figures indicate that UI's position that a switch is required to maintain contradicts the teachings of the patent.

ii. Discussion

UI has conceded that Kanatani meets the function requirement of the Maintaining Terms. The remaining issue to be resolved is whether the structure used by Kanatani to achieve that function, namely, diodes (without switches), is, as a matter of law, the same as the structure disclosed in the '400 Patent for maintaining. Because the Court held in the Claim Construction Order that diodes *only* are corresponding structure for the Maintaining Claim, Fujitsu is entitled to summary judgment of invalidity as to these claims.

In the Claim Construction Order, the Court addressed corresponding structure for the Maintaining Terms, stating, based on the agreement of the parties, that "diodes D1 and D2 should be included as corresponding structure for the maintaining claim terms, Claim Terms 30 and 39."[12] Claim Construction Order at 49. In the chart that summarizes the Court's claim construction, corresponding structure for Claim Terms 30 and 39 includes "D1/S3" and "D2/S4" for Figures 5 and 7. Claim Construction Order at 58. UI asserts that the Claim Construction Order should be read as holding that corresponding structure for the Maintaining Terms includes a switch/diode combination but does not include a diode-only embodiment. UI is incorrect.

It is true that the Court did not expressly state in the Claim Construction Order that diodes *alone*, without switches, are disclosed as corresponding structure for the maintaining terms in the '400 Patent.[13]

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[12] Claim Terms 30 and 39 are found in claim 31 of the '400 Patent and read as follows:

> Claim Term 30: "means for maintaining the panel capacitance in a charged state after charging the panel capacitance and prior to discharge"
>
> Claim Term 39: "means for maintaining the panel capacitance in a discharged state after discharge and prior to again charging the panel capacitance"

[13] The Court did however, reject UI's assertion that a power supply should be included as part of corresponding structure for the maintaining terms on the basis that "UI concedes that a *diode alone* can maintain the panel capacitance in a charged or discharged state." Claim Construction Order at 49 (emphasis added).

However, this holding is conveyed in the Claim Construction Order by the use of a slash rather than the word "with" in the Court's claim construction chart. Claim Construction Order at 58. Specifically, the Court used a slash to convey that the identified diodes and switches were alternative structures, whereas the word "with" was used when elements *together* constituted corresponding structure. Further, it is evident from context that the only reasonable reading of the Claim Construction Order is that diodes alone are disclosed as a corresponding structure for achieving the maintaining function. In particular, during claim construction neither UI nor Fujitsu ever suggested that diodes alone were not corresponding structure for the Maintaining Terms. To the contrary, the parties expressly *agreed*, both in their Joint Claim Construction Statement and in their briefs, that in Figures 5, 7, 9 and 10, maintaining could be achieved *either* with a diode *or* with a diode in combination with a switch. *See* Silzars SJ Decl., Ex. 32, Joint Claim Construction and Prehearing Statement; Ex. 52, The University's Opening Claim Construction Brief at 43; Ex. 53, Fujitsu's Responsive Brief at 36, 44; Ex. 54, UI's Reply at 32. The parties confirmed their position on this issue at the claim construction hearing.

Nor is UI's position supported by the Court's statement that "switches are critical for performing the maintaining and clamping functions." *See* Opposition at 56 (citing Claim Construction Order at 47). This statement addressed the question of whether switches were corresponding structure for the maintaining and clamping terms in some embodiments or rather, whether only the paths *through* the closed switches were part of corresponding structure. The Court was not addressing whether diodes alone were disclosed as corresponding structure for achieving the maintaining function and the statement has no bearing on that issue.

Because the Court held in the Claim Construction Order that diodes are corresponding structure for the Maintaining Terms, and in light of the fact that Kanatani also uses diode to achieve this function, the Court concludes that the Maintaining Claims are anticipated as a matter of law.

3. Infringement of Claims 26, 32-33, 36, and 39-40

a. Summary of the Arguments

Fujitsu argues it is entitled to summary judgment that claims 26, 32-33, 36, and 39-40 ("the Remaining Claims") are not infringed, either literally or under the doctrine of equivalents. UI does not dispute that there is no literal infringement of these claims. *See* UI September 18, 2003 Disclosures, Literal

Infringement Claim Chart. Thus, the issue in dispute is whether the accused devices infringe under the doctrine of equivalents. Fujitsu makes several arguments in support of its contention that the doctrine of equivalents does not apply.

First, Fujitsu argues that the changes it has made to its devices – most significantly, using clock-timed signals to clamp to an external power supply or to ground well before the current in the inductor reaches zero and the panel capacitance is fully charged or discharged – are not "insubstantial" and therefore, to apply the doctrine of equivalents to these devices is inappropriate and will result in the elimination of meaningful limitations in the claimed invention. Motion at 28-30. In particular, Fujitsu points to test results that show that its devices clamp while there is substantial current still flowing in the inductor and when the panel voltage is substantially different from the voltage level of the sustain power supply. Motion at 26-27. Fujitsu further cites to evidence that the energy efficiency of the accused devices is well below the energy efficiency projected by the inventors for those practicing the invention. Motion at 26-27. Fujitsu asserts that the early clamping used in its devices allows it to achieve significant benefits that cannot be achieved using the claimed invention, namely, better image quality, robust operating ranges and higher sustain frequencies. Motion at 23.

Second, Fujitsu argues that UI is barred from asserting as an equivalent a circuit that clamps when the inductor current is not zero under the doctrine of prosecution history estoppel, because of both a narrowing amendment made during prosecution of the patent and arguments that were made during prosecution. Motion at 31-38. As to the narrowing amendment, Fujitsu argues that: 1) the inventors narrowed the claims by amendment, adding a limitation that called for clamping when the inductor current reached zero; 2) UI has not rebutted the presumption that the narrowing amendment was made for reasons of patentability; and 3) UI has not rebutted the presumption that a device that clamps before the inductor current reaches zero is *not* one of the equivalents that was surrendered as a result of the amendment. Motion at 31-34.

With respect to prosecution history disclaimer, Fujitsu asserts that the inventors made numerous statements during the prosecution in which they emphasized the importance of their technique, namely, charging and discharging the panel capacitance without interruption, until the inductor current equals zero, for achieving energy efficiency. Motion at 34-38. In light of these statements, Fujitsu argues, a reasonable

competitor could only conclude that UI surrendered the right to claim circuits that activate a switch to interrupt the flow of current through the inductor before the current reaches zero. *Id*.

Finally, Fujitsu argues that if the claims were stretched under the doctrine of equivalents to cover Fujitsu's devices, they would also encompass prior art, thus invalidating the claims. Motion at 40-45. Specifically, both the accused devices and the circuit covered in United States Patent No. 4,707,692 ("the '692 Patent" or "Higgins") switch to interrupt resonant charging shortly after the inductor current reaches a maximum, according to Fujitsu. *Id*.

UI rejects Fujitsu's characterization of the accused devices, arguing that UI's test results are sufficient to establish a genuine question of fact as to whether the doctrine of equivalents applies to the accused devices. First, UI asserts that its tests show that the switches for clamping in Fujitsu's circuits are not activated until substantially all the charging or discharging operation has been completed. Opposition at 5-6. Second, UI argues that charging and discharging in the accused devices is not interrupted until the inductor current equals zero, citing to evidence that the energy remaining in the inductor at the time of clamping continues to flow into the panel via the process of concurrent charging. *Id.* at 6-7.

UI also points to energy efficiency determinations by Dr. Inan showing that early clamping in Fujitsu's devices does not result in a loss of energy efficiency and does not affect image quality, contrary to Fujitsu's assertions. *Id*. at 8-12. According to UI, these results reflect the existence of a "range of clamp times within which the energy efficiency remains unchanged," allegedly referred to by Fujitsu's engineers as the "energy recovery saturation range." *Id*. at 6-7. UI contends, further, that evidence of copying by Fujitsu's own engineers indicates that they have long been aware that early clamping is interchangeable with clamping when the inductor current equals zero and does not affect energy efficiency or image quality. *Id*. at 12-13.

UI rejects Fujitsu's reliance on the doctrine of prosecution-based estoppel, arguing that the doctrine does not apply because the Remaining Claims were not amended and nothing related to the temporal scope of the clamping limitations was surrendered during prosecution. *Id*. at 30-41.

Finally, UI asserts that Fujitsu's argument that the Higgins prior art precludes application of the doctrine of equivalents fails because Fujitsu improperly focuses on individual claim limitations rather applying the "hypothetical claims" analysis required by the Federal Circuit. *Id*. at 41-49.

b. Doctrine of Equivalents: Legal Standard

A determination of infringement is a two-step process. *Wright Medical Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1443 (Fed. Cir. 1997). The first step is claim construction, which is a question of law to be determined by the court. *Id*. The second step is an analysis of infringement, in which it must be determined whether a particular device infringes a properly construed claim. *Id*. This analysis is a question of fact. *Id*. A device literally infringes if each of the elements of the asserted claims is found in the accused device. *Id*. In the alternative, a device may infringe under the doctrine of equivalents "if every limitation of the asserted claim, or its 'equivalent,' is found in the accused subject matter, where an 'equivalent' differs from the claimed limitation only insubstantially." *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 149 F.3d 1309, 1315 (Fed. Cir. 1998).

In determining equivalence, Courts often consider "[w]hether a component in the accused subject matter performs substantially the same function as the claimed limitation in substantially the same way to achieve substantially the same result." *Id*. However, "'[e]quivalence . . . is not the prisoner of a formula and is not an absolute to be considered in a vacuum.'" *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 24-25 (1997) (quoting *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950)). In *Graver Tank*, the Court described the equivalence inquiry as follows:

> What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. . . . In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents. Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform. An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.

Id. (quoting *Graver Tank*, 339 U.S. at 609).

The doctrine of equivalents may not be applied where it would "erase 'meaningful structural and functional limitations of the claim on which the public is entitled to rely in avoiding infringement.'" *Conopco, Inc. v. May Dep't Stores Co.*, 46 F.3d 1556, 1562 (Fed. Cir. 1994) (quoting *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935 (Fed. Cir. 1987)); *see also Lockheed Martin Corp. v. Space Sys./ Loral, Inc.*, 324 F.3d 1308, 1320 (Fed. Cir. 2003) (holding that "if a court determines that a

finding of infringement under the doctrine of equivalents 'would entirely vitiate a particular claim[ed] element,' then the court should rule that there is no infringement under the doctrine of equivalents") (quoting *Bell Atlantic Network Servs., Inc. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1280 (Fed. Cir. 2001). Failure to meet a claim limitation, by itself, is not necessarily enough to "erase" or "vitiate" that claim element. *Ethicon*, 149 F.3d at 1317. As the *Ethicon* court noted, "any analysis of infringement under the doctrine of equivalents *necessarily* deals with subject matter that is 'beyond,' 'ignored' by, and not included in the literal scope of a claim." *Id*. Thus, the relevant inquiry is whether the subject matter is "specifically excluded" from coverage such that its inclusion under the doctrine of equivalents is "somehow inconsistent with the language of the claim." *Id*.

For example, in *Moore U.S.A., Inc. v. Standard Register Co.*, 229 F.3d 1091, 1094 (Fed. Cir. 2000), the holder of a patent for a mailer-type business form which contained a built-in envelope sued for patent infringement and argued that the accused mailer infringed under the doctrine of equivalents. One of the asserted claims called for two longitudinal strips of adhesive "extending the majority of the lengths of" certain surfaces. *Id*. at 1095. The accused mailer contained adhesive strips that extended only 47.8% of the length of the surface at issue. *Id*. at 1097. The district court granted summary judgment on the doctrine of equivalents in favor of the defendant on the basis that 47.8% could not be "a majority." *Id*. at 1098. The Federal Circuit agreed, holding that:

> the applicant's use of the term 'majority' is not entitled to a scope of equivalents covering a minority for at least two reasons. First, to allow what is undisputably a minority (*i.e.*, 47.8%) to be equivalent to a majority would vitiate the requirement that the "first and second longitudinal strips of adhesive . . . extend the majority of the lengths of said longitudinal marginal portions." . . . If a minority could be equivalent to a majority, this limitation would hardly be necessary . . . Second, it would defy logic to conclude that a minority – the very antithesis of a majority – could be insubstantially different from a claim limitation requiring a majority, and no reasonable juror could find otherwise.

Id. at 1106.

Similarly, in *Talbert Fuel Sys. Patents Co. v. Unocal Corp.*, 347 F.3d 1355, 1360 (Fed. Cir. 2003), the Federal Circuit affirmed summary judgment on the doctrine of equivalents where the claimed device had a boiling point no higher than 345 degrees Fahrenheit whereas the accused devices had a boiling point of between 373.8 degrees and 472.9 degrees Fahrenheit. In that case, the court held that the

doctrine of prosecution history estoppel applied. *Id*. The court went on to hold, however, that even if there were no estoppel, summary judgment was appropriate because "no reasonable trier of fact could find only insubstantial differences between fuels having an endpoint of 345 degrees F. and fuels with the endpoints shown for the Unocal fuels." *Id*.

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On the other hand, in *Wright Medical Tech. Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997), the court held that summary judgment for the defendant on the doctrine of equivalents was inappropriate because a material issue of fact remained. There, the asserted patent disclosed a medical device used to prepare the femur bone for attachment of an artificial knee. *Id*. at 1441. One of the asserted patent claims required an "intramedullary rod portion adapted to closely fit and extend through the narrowest portion of the human femur." *Id*. at 1442. The court construed the claim as requiring that the rod "extend all the way through the isthmus of the femur." *Id*. The accused device contained an intermedullary rod, but it did not extend all the way through the isthmus of the femur. *Id*. at 1444. Nonetheless, the court held that a material issue of fact remained on the question of equivalence because the plaintiff introduced testimony by the designer of the accused device that "the intramedullary rod of the [accused device] need not extend all the way through or fit tightly into the isthmus of the femur to achieve at least some of the functionality of the claimed intramedullary rod." *Id*. at 1445. *See also Ethicon*, 149 F.3d at 1320-1321 (noting that in *Wright*, the difference between the claimed rod and the rod in the accused device was "not clear enough on summary judgment to conclude that no reasonable fact finder could find that the rods were equivalent . . . especially . . . given the patentee's evidence suggesting that the rods performed substantially the same function in substantially the same way to achieve substantially the same result").

Application of the doctrine of equivalents also may be limited as a result of the prosecution history of the patent. Under the doctrine of prosecution history estoppel, a patentee is barred from imposing liability for infringement by an otherwise equivalent device "when the claim scope that would have reached the accused device or method was relinquished by the patentee in order to avoid the prior art." *Pall Corp. v. Hemasure, Inc.*, 181 F.3d 1305,1311 (Fed. Cir. 1999). This doctrine may be applied on the basis of either arguments made during prosecution that show a clear and unmistakable surrender of subject matter,

see Bayer AG v. Elan Pharm. Research Corp., 212 F.3d 1241, 1251 (Fed. Cir. 2000), or where a patentee amended the application or added claims to avoid issues of patentability such as prior art. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1366 (Fed. Cir. 2003) ("*Festo IX*").

In the case of prosecution history estoppel based on arguments or disclaimer, the court applies an objective standard to determine whether "'a competitor would reasonably believe that the applicant had surrendered the relevant subject matter.'" *Bayer*, 212 F.3d at 1251. In the case of amendment-based prosecution estoppel, the court must apply a three-step analysis, which has been summarized by the Federal Circuit as follows:

> The first question in a prosecution history estoppel inquiry is whether an amendment filed in the Patent and Trademark Office ("PTO") has narrowed the literal scope of a claim. . . If the amendment was not narrowing, then prosecution history estoppel does not apply. But if the accused infringer establishes that the amendment was a narrowing one, then the second question is whether the reason for that amendment was a substantial one relating to patentability. . . . When the prosecution history record reveals no reason for the narrowing amendment, *Warner-Jenkinson* presumes that the patentee had a substantial reason relating to patentability; consequently, the patentee must show that the reason for the amendment was not one relating to patentability if it is to rebut that presumption. . . a patentee's rebuttal of the *Warner-Jenkinson* presumption is restricted to the evidence in the prosecution history record. . . . If the patentee successfully establishes that the amendment was not for a reason of patentability, then prosecution history estoppel does not apply. If, however, the court determines that a narrowing amendment has been made for a substantial reason relating to patentability – whether based on a reason reflected in the prosecution history record or on the patentee's failure to overcome the *Warner-Jenkinson* presumption – then the third question in a prosecution history estoppel analysis addresses the scope of the subject matter surrendered by the narrowing amendment. . . . At that point *Festo VIII* imposes the presumption that the patentee has surrendered all territory between the original claim limitation and the amended claim limitation. . . . The patentee may rebut that presumption of total surrender by demonstrating that it did not surrender the particular equivalent in question according to the criteria discussed below. Finally, if the patentee fails to rebut the *Festo* presumption, then prosecution history estoppel bars the patentee from relying on the doctrine of equivalents for the accused element. If the patentee successfully rebuts the presumption, then prosecution history estoppel does not apply and the question whether the accused element is in fact equivalent to the limitation at issue is reached on the merits.

Festo IX, 344 F.3d at 1366-67 (citing *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.* 535 U.S. 722, 740 (2002) ("*Festo VIII*"), *Warner-Jenkinson Co. v. Hilton-Davis Chem.*, 520 U.S. 17

(1997), and *Pioneer Magnetics, Inc. v. Micro Linear Corp.*, 330 F.3d 1352, 1356 (Fed. Cir. 2003)). The application of prosecution history estoppel, including the question of whether the presumption of surrender has been rebutted, is a question of law. *Festo IX*, *344 F.3d at 1367*.

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Finally, even if the accused device meets the test for equivalence, the doctrine of equivalents may not be applied "if the asserted scope of equivalency of what is literally claimed would encompass the prior art." *Wilson Sporting Goods Co. v. David Geoffrey and Assoc.*, 904 F.2d 677, 683 (Fed. Cir. 1990). The rationale underlying this rule is that "a patentee should not be able to obtain, under the doctrine of equivalents, coverage which he could not lawfully have obtained from the PTO by literal claims." *Id*. at 684.

In *Wilson Sporting Goods*, the court set forth an approach using a hypothetical claim to determine whether application of the doctrine of equivalents is precluded by prior art. *Id*. at 677. The court described this approach as follows:

> To simplify analysis and bring the issue onto familiar turf, it may be helpful to conceptualize the limitation on the scope of equivalents by visualizing a hypothetical patent claim, sufficient in scope to literally cover the accused product. The pertinent question then becomes whether that hypothetical claim could have been allowed by the PTO over the prior art. If not, then it would be improper to permit the patentee to obtain that coverage in an infringement suit under the doctrine of equivalents. If the hypothetical claim could have been allowed, then prior art is not a bar to infringement under the doctrine of equivalents.

Id. at 684. Hypothetical claims may broaden slightly the asserted claim but they may not narrow the claim. *Streamfeeder L.L.C. v. Sure-Feed Sys., Inc.*, 175 F.3d 974, 983 (Fed. Cir. 1999). In applying the *Wilson Sporting Goods* approach, once the accused infringer has come forward with evidence showing the accused device is in the prior art, the patentee bears the burden of persuasion on the question of whether the hypothetical claim ensnares the prior art. *Id.* at 980. While the approach in *Wilson Sporting Goods* is considered useful, "nothing in *Wilson* mandates its use as the only means of determining the extent to which the prior art restricts the scope of equivalency that the party alleging infringement under the doctrine of equivalents can assert." *Conray v. Reebok Int'l*, 14 F.3d 1570, 1576 (Fed. Cir. 1994).

c. Elimination of Meaningful Limitations

Fujitsu asserts that it is entitled to summary judgment of noninfringement as to the Remaining Claims on the basis that it has presented unrebutted evidence that the accused devices differ substantially from the invention claimed in the '400 patent and further, that to apply the doctrine of equivalents to these devices would vitiate crucial claim limitations. The Court agrees.

The Remaining Claims, that is, claims 26, 32-33, 36 and 39-40, include two, closely related claim terms. First, all of the Remaining Claims contain charging/discharging limitations. As to claims 32-33, 36, and 39-40, the Court held in the Claim Construction Order that the charging/discharging limitations require that charging and discharging of the panel capacitance must be "through the inductor until all of the energy is removed from the inductor and the inductor current reaches zero." Claim Construction Order at 56. Further, during the time that the panel capacitance is being charged and discharged through the inductor, charging and discharging must be "solely through the inductor." *Id*. These claims allow some additional charging after the inductor current reaches zero, so long as it is not "substantial." *Id*. at 27. Although the Court did not expressly construe claim 26, the charging /discharging limitation that is incorporated in that claim from claim 21, on which claim 26 depends, is described using virtually the same language as is used in the charging/discharging terms that were construed by the Court. Accordingly, the Court concludes that the charging and discharging limitation in claim 26 have the same meaning as the charging/discharging limitations in the construed claims. *See Inverness Med. Switzerland GmbH v. Princeton Biomedtech. Corp.*, 309 F.3d 1365, 1371 (Fed. Cir. 2002) (holding that "a claim term used in multiple claims should be construed consistently").

Second, all of the Remaining Claims include a clamping limitation. In the Claim Construction Order, the Court held that the clamping limitations contained in claims 33, 36, 39 and 40 require "structures that activate in response to the inductor current reaching zero upon the panel capacitance being substantially fully charged [or discharged] through the inductor to add a specific reference voltage." Claim Construction Order at 58-59. Again, although the clamping limitations contained in claims 26 and 32 were not expressly construed in the Claim Construction Order, the Court concludes based on the use of virtually identical language in these claims, that the clamping limitation in claims 26 and 32 have the same meaning as the clamping limitations in the construed claims.

Fujitsu presents evidence, based on actual waveforms, that the accused devices do not meet – or indeed, come anywhere close to meeting – the charging/discharging and clamping limitations discussed above. The waveforms show: 1) the amount of current in the inductor at the time of clamping relative to the maximum current in the inductor; and 2) the voltage level of the panel capacitance at the time of clamping as compared to the end-voltage reached after charging from the clamping path is complete. *See* Silzars SJ Decl. at ¶¶ 84-85, 91, 97 & 102. The values obtained from these waveforms show that for all of the accused panels, the amount of current in the inductor at the time of clamping is not zero or even close to zero.[14] *See id*. and fn. 13, herein. Rather, the current in the inductor at the time of clamping is substantial – for many of the panels, closer to the maximum current than to zero. *Id*. Similarly, these measurements show that for all of the panels, the panel capacitance at the time of clamping is not fully charged or even close to being fully charged. Rather, the amount of additional charging to the panel capacitance after clamping is substantial. *Id*.

The Court concludes that Fujitsu's evidence regarding current at the time of clamping and voltage differences is sufficient to support a finding of summary judgment of noninfringement as to the Remaining Claims. Here, as in *Moore* and *Talbert*, the current in the inductor at the time of clamping is simply too far from zero to allow a jury to reasonably conclude that the zero inductor current limitation in the Remaining Claims has been met under the doctrine of equivalents. Similarly, a reasonable juror could not conclude

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[14] *See* Silzars SJ Declaration at ¶ 84 (21" version A panels, using one-inductor design) and Ex. 20 at 1- 2 (corresponding waveforms, showing inductor current peak as 14 amps and at time of clamping as 3.75 amps; and showing panel capacitance voltage at time of clamping as 112 volts, as compared to maximum voltage of 177 volts); ¶ 85 (21" version B panel, using one inductor design) and Ex. 20 at 3-4 (corresponding waveforms, showing inductor current peak as 16 amps and at time of clamping as 14.5 amps; and showing panel capacitance voltage at time of clamping as 90 volts, as compared to maximum voltage of 185 volts); ¶ 91 (two inductor type panels) and Ex. 20 at 7- 16 (corresponding waveforms, showing the following inductor current values at time of clamping and peak: 11 amps out of 12 amps (25"); 13.5 amps out of 14 amps (37" XGA); 18 amps out of 24 amps (42" model 4); 24 amps out of 37 amps (42" model 5); 40 amps out of 50 amps (42" HD-E)); and showing the following voltage values at time of clamping and after fully charging: 105 when clamped and 185 highest (25"); 110 when clamped and 175 highest (37" XGA); 110 when clamped and 185 highest (42" model 4); 120 when clamped and 175 highest (42" model 5); 120 when clamped and 170 highest (42" HD-E); ¶ 97 (measurements for TERES panels showing that for 37H2 inductor current was 8.5 amps at clamping, with peak current of 14.5 amps and that panel capacitance was at 55 volts at time of clamping and reached a maximum of 85 volts; and showing that for 42H2 inductor current was 8.0 amps at time of clamping with peak current of 16 amps and that panel capacitance was at 65 volts at time of clamping and reached a maximum of 85 volts); and ¶ 102 (measurements for TERES+ panel, showing that inductor current was 20 amps at time of clamping with peak current of 26 amps and that panel capacitance was at 135 volts at time of clamping and reached a maximum of 180 volts).

that the panel was "substantially fully charged" at the time of clamping where, as here, there is a significant voltage difference between the panel and the power supply at the time of clamping for all of the accused devices. Further, the Court finds for the reasons discussed below, that the evidence offered by UI in opposition to summary judgment, while extensive, is insufficient to show a genuine issue of material fact.

First, UI argues that the waveforms on which Fujitsu relies are misleading because they fail to account for the added inductance introduced by attachment of a wire current loop to measure the inductor current. *See* Inan Report at 92-93. According to UI, this added inductance "significantly exaggerates the inductor current levels in the accused products at the time the switch for clamping is activated." Opposition at 17. UI's argument regarding the added inductance allegedly caused by use of stand-off wires fails because UI presents *no* evidence regarding the magnitude of the error, much less, evidence that the error is significant enough that if corrected, the inductor current at time of clamping for any of the panels measured would have been zero or close to zero. Rather, Dr. Inan merely states generally that the stand-off wires introduced added inductance and resulting error in measurement. *See* Inan Decl. at 92. Indeed, Dr. Inan himself relied on several of these waveforms without correcting for the alleged added inductance. *See* Silzars SJ Decl. at ¶ 91. Fujitsu, on the other hand, has introduced testimony by Dr. Silzars for each category of device showing that the added inductance introduced by the stand-off wires *would not* have significantly changed its results. *See* Silzars SJ Decl. at ¶¶ 83, 90, 102, 112-123. In the face of this evidence, UI's vague allegations of inaccuracy are not sufficient to create a material issue of fact.

Second, UI points to "experimental estimates" used by Dr. Inan that it says show that the inductor current in the TERES and TERES+ circuits at the time of clamping is zero. *See* Inan Report at 18-19 and 105-111. As a preliminary matter, the Court finds that this argument – which amounts to an assertion that the doctrine of equivalents applies because the TERES devices literally infringe – is barred by UI's own binding admission that there is no literal infringement under the Claim Construction Order. *See* UI September 18, 2003 Disclosures. Further, this argument fails because the evidence upon which Dr. Inan relies does not satisfy the requirements of *Daubert* and therefore, cannot be considered.[15]

[15] At oral argument, the parties stipulated that a *Daubert* hearing was not required because the issue was adequately addressed in the briefs.

Scientific evidence is admissible under Fed. R. Civ. P. 702 if it will "assist the trier of fact to understand the evidence or to determine a fact in issue." This test, in turn, is met if an expert's testimony is based on "scientifically valid principles." *Daubert*, 509 U.S. at 597. "[T]he expert's bald assurance of validity is not enough. Rather, the party presenting the evidence must show that the expert's findings are based on sound science, and this will require some objective, independent validation of the expert's methodology." *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311, 1316 (9th Cir. 1995). Factors that courts may consider in making this determination are: 1) whether the methodology has been tested; 2) whether the technique has been subjected to peer review; 3) the known rate of error; 4) the degree of acceptance in the relevant scientific community. *Daubert*, 590 U.S. at 592-594.

Here, UI counters evidence based on actual waveforms with estimates of inductor current that attempt to correct for added inductance that Dr. Inan speculates has been introduced by the use of test wires – this time, long test wires used by UI's own experts rather than the shorter test wires used to generate the waveforms on which Fujitsu relies. *See* Silzars SJ Decl. at ¶111. Dr. Inan provides no explanation as why he chose to estimate added inductance when the added inductance can be measured. *See* Silzars SJ Decl. at 62, ¶ 115 and Ex. 6, Inan Depo. at 447-451. Nor does UI cite any evidence suggesting that Dr. Inan's approach has been subjected to peer review or is or would be accepted in the relevant scientific community. The Court concludes that UI has not met the burden of showing that Dr. Inan's methodology is reliable rather than speculative. Accordingly, the Court declines to consider the "experimental estimates" on which UI relies in support of its argument that there is a material issue of fact as to infringement by the TERES devices.

Third, Dr. Inan's measurements purportedly showing that Fujitsu's devices do not switch to clamp until 85% of charging through the inductor is complete also do not create a material issue of fact. These measurements are irrelevant, as the '400 Patent does not set forth such a parameter or teach that it is relevant to the losses the inventors sought to avoid. In particular, the inventors sought to minimize energy losses that result from switching when there is current in the inductor and when there is a voltage difference between the power supply and the panel capacitance, as the clamping

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and charging/discharging limitations make clear. The amount of charge that has passed through the inductor at the time of clamping is not mentioned anywhere in the patent.

Furthermore, to the extent that UI's determinations regarding the amount of charging that has been completed are based on use of PSPICE modeling, these determinations do not meet the requirements of *Daubert*. In particular, UI offers no explanation for its expert's reliance on a modeling technique that is used mainly to simulate circuits in the early stages of designing the circuit in order to obtain currents and voltages in *existing* circuits. *See* Silzars SJ Decl. at 69-70, ¶¶ 130-133. UI cites no evidence suggesting that Dr. Inan's methodology has been subject to peer review or would be accepted in the relevant scientific community. To the contrary, UI's expert concedes that he is unaware of any scientist using PSPICE to obtain currents and voltages in actual circuits instead of simply measuring to obtain these values. Silzars SJ Decl. at 69-70, ¶¶ 130-132 & Ex. 6, Inan Depo. at 351-355. In fact, there appears to be no reason a scientist would do so, given that for an existing circuit the most effective use of PSPICE can do no more than match the actual waveforms.

The Court also questions the reliability of Dr. Inan's use of PSPICE in light of the fact that he admitted to manipulating the input data in order to reproduce the *actual* waveforms. *See, e.g.*, Silzars SJ Decl. at 71, ¶ 135 & Ex. 33, Inan SJ Report, Tab 10, p. 3, Sec. I.B. For example, with respect to the 21" Model B, Dr. Inan replaced the 344 nH inductor in the accused circuit with a 380 nH inductor and used a reduced value 29 nF capacitor in place of the 40-50 nF capacitors used with the accused circuit. *Id*. This alteration of inputs makes the results obtained by Dr. Inan further suspect, as it suggests that values obtained by using this methodology have little bearing on the operation of the actual accused devices. Accordingly, the Court concludes that all of the data obtained using the PSPICE modeling technique must be rejected under *Daubert* as unreliable and irrelevant.

The Court also rejects UI's assertion that there is a material issue of fact based on evidence that in Fujitsu's devices, charging is uninterrupted until the inductor current reaches zero. *See* Opposition at 6-8. In particular, UI cites to evidence that current in the inductor continues to flow into (in the case of charging) or out of (in the case of discharging) the inductor even after clamping has occurred. Opposition at 6-8; Inan Report at 40-45; *see also* Silzars SJ Decl., Ex. 39, UI's September 18, 2003 Disclosures, Literal Infringement Claim Chart at 1 (stating that "the University does contend that in the accused products,

charging and discharging is not 'interrupted' as that term is used in the court's claim construction"). Even assuming that Dr. Inan's testimony on this issue is correct, this argument fails because UI presents no evidence that the accused devices meet another limitation of the charging and discharging terms, namely, the requirement that "all of the charging [and discharging] of the panel capacitance during the time that the panel capacitance is being charged [or discharged] shall be *solely* through the inductor." Claim Construction Order at 56 (emphasis added). Indeed, UI concedes that this requirement is *not* literally met. *See* Silzars SJ Decl., Ex. 39, UI's September 18, 2003 Disclosures, Literal Infringement Claim Chart at 1 (stating that "the University does not contend that the court's step requirement that 'all of the charging or discharging of the panel capacitance during the time that the panel capacitance is being charged or discharged shall be solely through the inductor' is literally satisfied by the accused devices").

Rather, UI implies without expressly stating as much in its briefs, that the Court should revise its claim construction to eliminate the requirement that charging and discharging shall be "solely through the inductor." The Court declines to do so for two reasons. First, UI may not, at this stage of the proceeding, revisit issues that were already determined at claim construction. Second, even though UI may now have established that a factual question exists as to whether concurrent charging is "technically impossible," as the Court concluded in its Claim Construction Order, it *has not* presented any evidence to refute the assertion of Fujitsu's expert that "[o]nce the voltage level of the panel is clamped directly to a power source, that power source controls the voltage level of the panel capacitance [and] the inductor has little or no effect upon the panel capacitance." Claim Construction Order at 27 (quoting Silzars Decl. at 61). To the contrary, Dr. Inan agrees with this statement. *See* Inan Report at 43. It is this evidence on which the Court relied in concluding that the words "charging through the inductor"could not encompass concurrent charging. Specifically, the Court concluded that if the charge coming through the inductor after the panel is clamped to a power source has "little or no effect" on the panel capacitance while the charging that occurs directly from the power source controls the voltage level of the panel, concurrent charging is not charging "through the inductor." This is true even if the current in the inductor continues to flow into (or out of) the panel after switching to clamp has occurred. Therefore, the Court reiterates its conclusion that the charging and discharging claim terms require that all of the charging and discharging of the panel capacitance during the time that the panel capacitance is being charged or discharged shall be solely through the inductor.

Finally, UI has not argued or pointed to any evidence in the record suggesting that charging via connection to a power supply or ground is substantially the same as charging solely through the inductor.

The evidence presented by UI on the subject of copying, image quality and energy efficiency also is not sufficient to create a material issue of fact. First, the Supreme Court has held that intent is not relevant to the doctrine of equivalents. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 35-36 (1997). On this basis, the Federal Circuit has determined that copying is not relevant to the doctrine of equivalents inquiry. *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1351 (Fed. Cir. 2002). With respect to image quality and energy efficiency, the Court finds no authority for the proposition that evidence that an accused device accomplishes a similar function to that of the claimed device is sufficient to create a material issue of fact where the court has made an independent determination that the accused device differs so substantially from the claimed device with respect to one or more claim limitations that the doctrine of equivalents cannot apply.

Furthermore, with respect to energy efficiency, UI's figures do not, in fact, have any bearing on whether the accused devices achieve the energy efficiency claimed by the inventors. This is because UI's expert did not follow the methodology set forth in the '400 Patent for measuring *absolute* energy efficiency but rather, created his own method for obtaining the *comparative* energy efficiency of the accused devices. Silzars SJ Decl., Ex. 6, Inan Depo. at 591 (stating that energy efficiency numbers were "only useful in terms of comparison of the various devices with one another"). Indeed, Dr. Inan admitted that he did not understand or agree with the method for testing efficiency set forth in the '400 Patent. *Id*. at 491.

Accordingly, the Court concludes that in light of Fujitsu's unrebutted evidence with respect to inductor current and voltage difference between the power supply and the panel capacitance at the

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time the switch to clamp is activated, no reasonable jury could conclude that the accused devices infringe the Remaining Claims under the doctrine of equivalents.

d. Prosecution History Estoppel

The prosecution history of the '400 Patent provides further support for the Court's conclusion that the doctrine of equivalents does not apply.

The relevant prosecution history is as follows: the patentees filed their original application for the '349 Patent (of which the '400 Patent is a continuation) on September 25, 1986, including original claims 1-15 ("the Original Claims"). Silzars SJ Decl., Ex. 14, FL062899 - FL062906. The Original Claims do not contain any limitation requiring that switching to clamp occur when the inductor current reaches zero or even refer to clamping, but they do refer generally to charging and discharging through an inductor. *Id*. On August 7, 1987, the patentees filed an amendment ("the Preliminary Amendment"), in which they added claims 16-71. *Id*. at FL062919 - FL062960. In that amendment, the patentees do not explicitly cancel or amend the Original Claims in any way. *Id*. On August 11, 1987, the PTO issued an office action indicating that the Original Claims had been rejected as "indefinite." *Id*. at FL062915 - FL062916. On September 4, 1987, the patentees filed an "Information Disclosure Statement" listing an article by M.L. Higgins. *Id*. at FL062962-FL062963. In an office action dated January 11, 1988, all of the new claims (claims 16-71) were rejected. *Id*. at FL062973 - FL062974.

On July 8, 1988, the patentees filed Amendment B in response to the August 7, 1987 and January 11, 1988 office actions. *Id*. at FL062980. In Amendment B, the patentees amended the Original Claims only slightly. For example, whereas claim 5 in the original application included a limitation that called for "an inductor for charging and discharging said panel capacitance," the limitation in claim 5, as amended, called for "an inductor for charging and discharging said panel capacitance *during driving of said panel electrodes*." *Id*. at FL062901 (original claim), FL062982 (amended claim). In addition, the patentees argued in support of rejected claims 51-71 that these claims should be accepted because they were "directed to an energy efficient technique for driving the electrodes of display panels wherein energy is recovered in a unique manner." *Id*. at FL062988. The patentees continued:

> This aspect of the invention is described throughout the application, particularly starting at specification page 17 and with reference to the drawings, particularly Figures 5-14.
>
> In the method aspect of the invention, for instance, with reference to claim 51, there is recited an energy efficient method of driving display panels through an inductor coupled to the panel electrodes, including the steps of:
>
> > charging the panel capacitance through said inductor, initially while storing the energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero; and

> discharging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero.
>
> The remaining claims 52-71 recite further features of this aspect of the invention in the groups listed previously on page 41 of the Preliminary Amendment of August 7, 1987. All of the remaining claims 52-71 recite the patentable distinctions indicated above with respect to claim 51. *In addition, claims 5-11 and 14 are also directed to the present energy efficient aspect of the present invention, and these claims have been amended and are believed to be allowable as amended*.

Silzars SJ Decl., Ex. 14 at FL062988-062989 (emphasis added). On October 11, 1988, claims 1-13 and 15 were allowed as amended by Amendment B. *Id*. at FL062993.

On February 7, 1991, the patentees filed another Amendment B in the continuing application for the '400 Patent. Seeking to overcome the objections of the PTO, the patentees made the following statement:

> It must be noted that the present invention offers significant advantages in the display art. Particularly with reference to the energy efficient display panel driver aspect of the present invention as recited in claims 14 and 36-56, the significant advantages justify denoting this as a pioneer invention. Most importantly, a plasma panel with an energy efficient sustainerof the present invention uses less power than a liquid crystal display incorporating the required backlighting. Claims 14, and 16-56 are not disclosed, taught or suggested by any combination of the references cited in the prior application or which were brought to the attention of the Patent Office in applicants INFORMATION DISCLOSURE STATEMENT of September 4, 1987 in the prior application.

Id., Ex. 15 at FL063171.

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i. Estoppel by Amendment

To determine whether UI is precluded from applying the doctrine of equivalents to the accused circuits based on amendment estoppel, the Court must apply the three-step analysis described in *Festo IX*. 344 F.3d at 1366-1367. The first question the Court must address is whether there was, in fact, an amendment that limited the literal scope of the claims. *Id.* at 1366. Based on a review of the prosecution history, the Court concludes that there was an amendment.

The doctrine of estoppel by amendment addresses the consequences of narrowing the literal scope of a claim by amendment. Typically, a narrowing amendment occurs when the PTO rejects a particular

claim based on prior art and the patentee files an amendment to that claim to overcome the prior art. *See Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 20 n. 5 (1997). Estoppel by amendment may also occur, however, when a patentee adds a new claim while at the same time deleting an existing claim regarding the same subject matter. *See Deering Precision Instruments, L.L.C. v. Vector Distribution Sys.*, 347 F.3d 1314 (Fed. Cir. 2003). For example, in *Deering*, the PTO rejected two of the claims in the application. *Id*. at 1325. In response, the patentee deleted the original two claims and added a new claim addressing the same subject matter. *Id*. On these facts, the court found that there had been a narrowing amendment and proceeded to address the remaining steps of the estoppel-by-amendment analysis. *Id*.

Finally, an amendment need not be in response to a rejection of a claim by the PTO to give rise to estoppel. *See Festo VI*, 234 F.3d 558, 568 (Fed. Cir. 2000) (holding that prosecution history estoppel applies to voluntary amendments and noting that "[t]here is no reason why prosecution history estoppel should arise if the Patent Office rejects a claim because it believes the claim to be unpatentable, but not arise if the applicant amends a claim because he believes the claim to be unpatentable"), *reversed on other grounds in Festo VIII*, 535 U.S. at 727-728.

Here, the patentees did not amend the original claims to add the charging/discharging and clamping limitations to those claims. Nor did they cancel or abandon the claims and replace them with claims that have a narrower scope. They simply added claims to the application. On this basis, UI argues that the doctrine of amendment-based estoppel may not be applied. The Court disagrees. While it is true that the facts here do not conform to the typical scenario in which amendment based estoppel is applied, it is clear from the prosecution history that the Preliminary Amendment not only *added* claims but also limited the scope of the original claims. This is most obvious in the July 8, 1988 Amendment B, which emphasizes the "energy efficient method" of driving display panels through an inductor where charging and discharging is not interrupted until the inductor current equals zero. Silzars SJ Decl., Ex. 14 at FL062988-062989. This amendment goes on to explicitly state that this aspect of the invention applies not only to the claims added in the Preliminary Amendment *but also* to claims 5-11 and 14. *Id*. Thus, reading the Preliminary Amendment and Amendment B together, the Court can only conclude that the addition of the narrower claims in the Preliminary Amendment also limited the scope of the Original Claims.

To reach a contrary result would "exalt form over substance and distort the logic" of the prosecution history estoppel doctrine. *See Builders Concrete, Inc. v. Bremerton Concrete Prod. Co.*, 757 F.2d 255, 260 (Fed. Cir. 1985). In *Builders Concrete*, the original application included thirteen claims. *Id*. at 259. The asserted claim, claim 10, referred to a transverse utility passage that was also referred to in original claims 1 and 2 of the application. *Id*. Claim 10 was not amended or criticized during the prosecution. *Id*. However, application claims 1 and 2 were amended to add limitations to the transverse utility passage element in response to concerns expressed by the PTO regarding prior art. *Id*. In a subsequent action for patent infringement in which only claim 10 was asserted, the patentee argued that the doctrine of prosecution history estoppel did not apply because claim 10 was not amended. *Id*. The court disagreed, explaining its conclusion as follows:

> The fact that the "passage"clause of patent claim 10 was not itself amended during prosecution does not mean that it can be extended by the doctrine of equivalents to cover the precise subject matter that was relinquished in order to obtain allowance of claim 1. It is clear from the prosecution history that the allowance of claim 1, the broadest claim with respect to the other elements of the float, depended on the amendment narrowing its "passage" definition to that of claim 10.

Id. at 260. Because the facts here are similar to those of *Builders Concrete*, the Court concludes that a narrowing amendment has occurred for the purposes of prosecution history estoppel. *See also Pall Corp. v. Hemasure*, 181 F.3d 1305 (Fed. Cir. 1999) (holding that "[w]hen a claim limitation is added in order to overcome a specific cited reference, estoppel as to that limitation is generated whether the

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limitation is added by amendment to pending claims, or by the submission of new claims containing the limitation").

Next, the Court must determine whether UI has rebutted the presumption that the amendment was a substantial one relating to patentability by pointing to some other reason for the amendment in the prosecution history. *Festo IX*, 344 F.3d at 1366. To rebut the presumption that the amendment was introduced for reasons of patentability, UI points to the fact that the amendment adding claims that include the clamping limitation was filed four days *before* the PTO rejected the original claims. UI argues further that the doctrine cannot apply because nowhere in the prosecution history do the inventors draw a

distinction between the claimed invention and the prior art based on the timing for activating the clamping switches. The Court finds these arguments to be insufficient to rebut the patentability presumption.

First, as noted above, it is clear from the case law that a voluntary amendment may give rise to prosecution history estoppel. Therefore, UI's reliance on the timing of the PTO's rejection of the Original Claims is misplaced. *See Festo VI*, 234 F.3d 558, 568 (Fed. Cir. 2000), *reversed on other grounds in Festo VIII*, 535 U.S. at 727-728. Second, UI fails to identify any evidence in the prosecution history that the reason for the amendment was something *other than patentablity. See Pioneer Magnetics, Inc. v. Micro Linear Corp.*, 330 F.3d 1352 , 1357 (Fed. Cir. 2003).

To the contrary, while the patentees did not state the reasons for the amendment, the prosecution history supports an inference that it was for reasons of patentability. In particular, the patentees filed a Preliminary Amendment that added the charging/discharging and clamping limitations at around the same time they officially disclosed the Higgins prior art to the PTO. As UI concedes, the Higgins prior art discloses a resonant circuit that switches to clamp when there is still significant current in the inductor, leading to energy losses that the inventors expressly sought to avoid in the '400 Patent. *See* '400 Patent, col. 9, lines 45-54; Bitzer Validity Expert Report at 14-16. It is reasonable, therefore, to conclude that the patentees added the clamping and charging/discharging limitations to avoid that same prior art. Because UI has not established that the amendment was offered for any other reason, it fails to rebut the patentability presumption.

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Finally, the Court must address whether UI has rebutted the so-call *Festo* presumption that the patentee has surrendered all the territory between the original claim limitation and the amended claim limitation. In *Festo IX*, the court described the factors that should be considered in making this determination as follows:

> [T]he Court identified the three ways in which the patentee may overcome the presumption. Specifically, the patentee must demonstrate that the alleged equivalent would have been unforeseeable at the time of the narrowing amendment, that the rationale underlying the narrowing amendment bore no more than a tangential relation to the equivalent in question, or that there was "some other reason" suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent.

344 F.3d at 1368. UI argues that prosecution history estoppel does not apply because the equivalent at issue was not foreseeable. In particular, UI states that "it was not foreseeable when the Preliminary Amendment was filed that activating the switches for clamping before the inductor current reached zero could serve the same function as activating the switches for clamping upon the inductor current reaching zero" because "the prior art makes no mention of the 'energy efficiency saturation range'." Opposition at 37. UI also submits declarations by the inventors stating that they were not aware of the "energy efficiency saturation range." The Court is not persuaded by UI's argument.

The crux of UI's argument is that because the "energy efficiency saturation range" had not been discovered, the patentees could not have foreseen that a device similar to the one claimed, but clamping before the inductor current reaches zero, might be developed. This assertion cannot be credited when it is clear from the patent itself that the inventors were not only aware that the timing of switching was a significant issue, but also that in the prior art, there were disclosed circuits that clamped *before* the inductor current reached zero. *See* '400 Patent, col. 9, lines 45-54. The discovery of a time period in which the energy losses resulting from early clamping are not as large as the energy losses would be in other time periods simply is not the kind of new technology that makes an equivalent unforeseeable. *See Festo IX*, 344 F.3d at 1369 (offering two examples of alleged equivalents that were unforeseeable: 1) transistors in relation to vacuum tubes; and 2) Velcro in relation to fasteners). Finally, because the standard of foreseeability is an objective one, the declarations of the inventors that they were not aware of the "energy efficiency saturation range" has little, if any, bearing on the *Festo* inquiry. *Id*.

Accordingly, the Court concludes that UI is barred under the doctrine of prosecution history estoppel from relying on the doctrine of equivalents with respect to the accused devices.

ii. Estoppel by Disclaimer

In the alternative, the Court concludes that the prosecution history supports a finding of estoppel by disclaimer. As stated above, in order for argument-based estoppel to apply, the disclaimer of equivalents must be clear and unmistakable. *Bayer*, 212 F.3d at 1251. In addressing whether there has been a clear and unmistakable disclaimer of equivalents, the court asks whether "a competitor would reasonably believe that the applicant had surrendered the relevant subject matter." *Id*.

Here, there has been a "clear and unmistakable" surrender of equivalents in which clamping occurs before the inductor-current reaches zero. In particular, the patentees emphasized that in both the new claims (claims 16-71) and in the Original Claims, a crucial feature was the use of an "energy efficient technique" in which charging and discharging is not interrupted until the inductor current reaches zero. Silzars SJ Decl., Ex. 14 at FL062988-062989. Based on this record, a reasonable competitor could only conclude that the patentees had disclaimed equivalents that use early clamping.

IV. CONCLUSION

The Federal Circuit has stated:

> If our case law on the doctrine of equivalents makes anything clear, it is that all claim limitations are not entitled to an equal scope of equivalents. Whether the result of the All Limitations Rule, . . . prosecution history estoppel, . . . or the inherent narrowness of the claim language, many limitations warrant little, if any, range of equivalents.

Moore, 229 F.3d at 1106. That is the case here. The charging/discharging and clamping limitations of the Remaining Claims were framed narrowly. The significance of these limitations – which were contained in an amendment – was explicitly emphasized in the prosecution history. And Fujitsu has presented unrebutted evidence that the accused devices switch to clamp when there is substantial current in the inductor and when there is a significant voltage difference between the power supply and the panel capacitance. For these reasons, no reasonable jury could find that the Remaining Claims are infringed under the doctrine of equivalents.[16]

Fujitsu's Motion is GRANTED as follows: 1) claims 21-25, 27-31, 35, and 38 of the '400 Patent are invalid as anticipated; 2) claims 21-40 of the '400 Patent are not literally infringed; and 3) claims 26, 32-33, 36, and 39-40 of the '400 Patent are not infringed under the doctrine of equivalents.

IT IS SO ORDERED.

Dated: July 13, 2004

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[16] Because a finding of infringement would erase meaningful claim limitations and moreover, is precluded under the doctrine of prosecution history estoppel, the Court does not reach Fujitsu's additional argument that it is entitled to summary judgment based on the Higgins prior art.

JOSEPH C. SPERO
United States Magistrate Judge